

Appl. No. 09/533,421
 Amd. Dated May 9, 2005
 Reply to Office Action of February 25, 2005

REMARKS/ARGUMENTS

Reconsideration of the rejections set forth in the Office Action dated February 25, 2005 is respectfully requested. Claims 1, 3-10, and 12-21 are currently pending and have been rejected.

Claim Objections

The Examiner has objected to claims 1, 6, 10, 15, 19, 20, and 21 for having informalities. Specifically, the Examiner has objected to these claims because the use of the phrase "communication link between the plurality of cards" is incorrect. On page 2 of the Office Action dated February 25, 2005, the Examiner has argued that "...it is important to note that 'communication link' is not a generic term according to the applicant's specification. It is defined on page 11 of the specification...."

The Applicant truly does not understand the Examiner's objection, and note that the Examiner has specifically stated that the Specification defines what a system communication link is. A system communication link may be defined, but the Applicant notes that claims 1, 6, 10, 15, 19, 20, and 21 do not claim a system communication link but, instead, claim a communication link. Further, the Examiner has argued that none of the applicant's figures show a communications links between cards. It is noted that as described at lines 22-24 on page 9 of the Specification, a data plane 110 allows for communications between subsystems 140 via point-to-point connectors 160. Data plane 110, subsystems 140, and point-to-point connectors 160 are all shown in FIG. 1 of the instant application. Cards may be considered to be subsystems, and point-to-point connectors are communication links because the support communications between subsystems. As such, it is respectfully submitted that the Applicant has not claimed system communication links but has claimed communications links, and communications links between cards are both described in the Specification and shown in the

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figures. The recitation of communications links between a plurality of cards does not constitute new teachings. Accordingly, it is believed that the Examiner's objections to the claims are improper, and the Applicant requests that the Examiner withdraw his objections to claims 1, 6, 10, 15, 19, 20, and 21.

The Applicant submits that in the preambles of the claims to which the Examiner has objected, as originally filed, it is clearly stated that data buses act as communications links between a plurality of cards. Hence, not only does the phrase "communications link between a plurality of cards" not constitute new teachings in general, but the phrase also does not constitute the addition of any matter to the claims. The Applicants have merely more clearly recited that which was already recited in the preambles of the claims. Therefore, the recitation of communication links between a plurality of cards throughout the claims is also considered to be well-supported for this reason as well.

Rejections under 35 U.S.C. § 103

The Examiner has rejected claims 1, 3, 6-8, 10, 12, 15-17, 20, and 21 under 35 U.S.C. § 103(a) as being unpatentable over Cantwell et al. (U.S. Patent No. 6,370,55), hereinafter referred to as Cantwell, in view of Read et al. (U.S. Patent No. 5,781,527), hereinafter referred to as Read. The Examiner has rejected claims 4 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Cantwell in view of Read, as applied to claims 1 and 3, and further in view of Quoc et al. (U.S. Patent No. 6,092,214), hereinafter referred to as Quoc. The Examiner has rejected claims 5 and 14 under 35 U.S.C. § 103(a) as being unpatentable over Cantwell in view of Read, as applied to claim 1, and further in view of Harris (U.S. Patent No. 5,771,274), hereinafter referred to as Harris. Claims 9 and 18 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Cantwell in view of Read, as applied to claim 1, and further in view of Badt, Jr. (U.S. Patent Pub. No. 2003/0133417), hereinafter referred to as Badt. Claim 19 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Cantwell in view of Read and further in view of Badt.

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1. Independent claims 1, 10, 20, and 21, and their respective dependents

Independent claim 1 requires that a method for controlling the operation of a flexible cross-connect system includes monitoring the operational status of cards and communications links between the cards in the system, determining when the operational status of any of the cards or links between the cards indicates that the card or link between the cards is non-operational, autonomously switching from the non-operational card or link between the cards to an associated redundant card or link between the cards, and determining when the non-operational active card or link between the cards requires maintenance. If it is determined that the non-operational active card or link between the cards requires maintenance, the method also includes reporting that maintenance is required.

The Examiner has argued that Cantwell in view of Read teaches the limitations of claim 1. The Applicants respectfully disagree with the Examiner, and submit that neither Cantwell nor Read, either alone or in combination, teach the limitations of claim 1. By way of example, although the Examiner has argued that Cantwell teaches of monitoring the operational status for each one of a plurality of cards and each communication link between the plurality of cards, the Applicant is unable to identify any teaching in Cantwell of such a limitation. Cantwell appears to teach of monitoring lines such as a DS1 line or an E1 line (Cantwell, column 12 at lines 41-42 and column 13 at line 7). Such lines, however, appear to be within a card and not between cards (Cantwell, column 12 at lines 36-41 and column 13 at lines 1-7). There does not appear to be any teaching or suggestion in Cantwell of monitoring operational status for communications links between a plurality of cards. Read does not appear to overcome this deficiency of Cantwell. As such, claim 1 is believed to be allowable over a combination of Cantwell and Read for at least this reason.

It is noted that Cantwell mainly teaches of performance monitoring (performance monitoring of DS1 and E1 lines, as taught at lines 41-42 of column 12 of Cantwell and at line 7 of column 13 of Cantwell), which is not equivalent to monitoring operational status. Cantwell also teaches of analog and digital loss of signal monitoring being performed on a received signal (Cantwell, column 15 at lines 57-59), which is also not the same as monitoring operational

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status. There is no suggestion in Cantwell that performance monitoring is performed to determine operational status. At lines 45-48 of column 17 of Cantwell, Cantwell teaches of monitor and selection circuitry providing failure detection. However, there is no indication that such failure detection is provided for each of a plurality of cards or for communications links between a plurality of cards. In general, the performance monitoring of Cantwell is also not taught as occurring relative to a plurality of cards and relative to communications links between a plurality of cards. Hence, claim 1 is further believed to be allowable for this additional reason as well.

The Examiner has acknowledged that Cantwell does not disclose reporting that maintenance is required for a non-operational active card or communications link. However, the Examiner has argued that Read teaches of reporting that maintenance is required. It is respectfully submitted that Read appears only to teach of reporting faults and errors. Reporting faults and errors is not the same as reporting that maintenance is required. As such, claim 1 is also believed to be allowable over the cited art for at least this reason as well.

Claims 3-5 and 9 each depend either directly or indirectly from amended independent claim 1 and are, therefore, each believed to be allowable over the art of record for at least the reasons set forth above with respect to claim 1. Each of these dependent claims recites additional limitations which, when considered in light of claim 1, are believed to further distinguish the claimed invention over the art of record. By way of example, claim 3 recites preventing communications from being sent to a non-operational active card or over a non-operational communications link. The Examiner has argued that Cantwell teaches such a limitation. The Applicant respectfully disagrees, and notes that Cantwell teaches that either network interface card 28 or network interface card 30 drives both switching fabric 24 and switching fabric 26 in the event that one of the cards is unavailable or out of service (Cantwell, column 7 at lines 38-42). Cantwell does not teach or suggest preventing communications from being sent. In the system of Cantwell, cards are described as being unavailable or out of service, but there is no teaching that communications are prevented from being sent to the unavailable or out of service card. In the absence of such teaching, it seems that communications could be sent to an

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unavailable or out of service card, and rejected by the unavailable or out of service card prior to being resent to an available card. As Read does not overcome this deficiency of Cantwell, claim 3 is further believed to be allowable for at least this additional reason.

Dependent claim 4 recites flagging a card with a non-operational status if the card is receiving a software upgrade. While the Examiner has admitted that neither Cantwell nor Read, alone or in combination, teach such a feature, the Examiner has argued that Quoc implicitly teaches that there is some sort of notice or flag that goes up when a part is being upgraded. The Applicant respectfully disagrees, and submits that it is not implicit that a card is flagged with a non-operational status if the card is receiving a software upgrade. In fact, Quoc teaches of sending small messages or frames (e.g., Quoc, column 6 at lines 24-26) to identify a master and a slave, or of querying to determine if a slave has been selected by a user as being a master (e.g., Quoc, column 8 at lines 9-12). A slave responds to queries or messages, as taught by Quoc in column 8 at lines 16-18). Hence, it follows that in the event of a software upgrade, say to a "master," a former slave would either send messages to identify itself as a master, or a query would be sent to both a master and a slave and replied to with an answer as to which is acting as a master. As such, the use of a flag is not implicit, as Quoc clearly teaches of sending messages and queries, and receiving responses. The Examiner has not shown that Quoc uses or suggests using a flag. Therefore, claim 4 is believed to be allowable for this additional reason as well.

Independent claims 10, 20, and 21 recite similar limitations as recited in claim 1, and are therefore believed to be allowable over the art of record for at least the reasons set forth above with respect to claim 1. Claims 12-14 and 18 each depend either directly or indirectly from

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2. Independent claims 6 and 15 and their respective dependents

Claims 6 and 15 each recite a limitation of monitoring the operational status for each one of a plurality of cards and for each communications link of a plurality of communications links between the plurality of cards. As noted above with respect to claim 1, Cantwell mainly teaches of performance monitoring of lines, which is not equivalent to monitoring operational status. Cantwell also teaches of analog and digital loss of signal monitoring being performed on a received signal (Cantwell, column 15 at lines 57-59), which is also not the same as monitoring operational status. There is no suggestion in Cantwell that performance monitoring is performed to determine operational status. At lines 45-48 of column 17 of Cantwell, Cantwell teaches of monitor and selection circuitry providing failure detection within a network interface. However, there is no indication that such failure detection is provided for each of a plurality of cards or for communications links between a plurality of cards. In general, the performance monitoring of Cantwell is also not taught as occurring relative to a plurality of cards and relative to communications links between a plurality of cards.

Claims 6 and 15 each also recite determining when the operational status indicates that a card or a communications link is non-operational. In teaching of performance monitoring, Cantwell does not teach of determining when a card or a link is non-operational. There is also no suggestion that performance monitoring of lines, and analog and digital loss of signal monitoring being performed on a received signal, somehow allow determining when a card or a link is non-operational. At best, Cantwell appears to teach a determination of how a line performs, and the determination of the quality of a received signal. Neither of these determinations is a determination of whether a card or a link is non-operational. Further, Cantwell does not teach or suggest providing failure detection for a card, or for communications links between cards. Since Read does not overcome this deficiency of Cantwell, and claims 6 and 15 each specifically recite determining when the operational status of a card or a communications link between a plurality of cards indicates that the card or the communications link is non-operational, claims 6 and 15 are believed to be allowable for at least this reason.

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Claims 7 and 8 depend from independent claim 6, and claims 16 and 17 depend from independent claim 15, and are each believed to be allowable over the art of record for at least the reasons set forth above with respect to claims 6 and 15. Each of these dependent claims recites additional limitations which, when considered in light of claims 6 and 15, as appropriate, are believed to further distinguish the claimed invention over the art of record. For example, claim 7 recites determining when a change in operational status has persisted for at least a predetermined amount of time. On pages 8 and 9 of the Office Action dated February 25, 2005, the Examiner makes the following statement (note that the Examiner's boldface type has been maintained):

“....Definitely a system like Read's that involves monitoring errors on a card and link is a system that distinguishes normal operation of a card or a link.... Any system that has a performance monitoring system has to have a timer.... If the measurement of errors with a specific period exceeds a predetermined threshold ... obviously if the problem persists with time it will be given a new status....” [underline emphasis added]

The Examiner has made definitive statements, when all he has actually shown in Read is that Read teaches of detecting errors, and of reporting faults and errors. Read neither teaches of, nor reasonably suggests, determining when a change in operational status has persisted for at least a predetermined amount of time. While Read appears to mention a timer initialized with a predetermined test period (Read, column 10 at line 59), there is no teaching or suggestion of determining when a change in operational status has persisted for at least a predetermined amount of time. As Read teaches in column 10 at lines 60-67, the expiration of the timer marks a time at which errors are no longer monitored and reported, and the origination of a fault is isolated. Read also states that errors are reported throughout a set time period. As such, Read does not suggest determining when a change in operational status has persisted for at least a predetermined amount of time. Rather, the predetermined test period of Read is an amount of time during which faults are monitored and reported. As there is no suggestion in Read of determining whether a change in operational status has persisted for a predetermined amount of time, claim 7 is believed to be allowable for at least this additional reason.

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3. Independent claim 19

Independent claim 19 recites a method which includes determining when a non-operational active card or a non-operational active communications link between a plurality of cards requires maintenance, and reporting that maintenance is required for the non-operational active card or the non-operational active communications link when it is determined that the non-operational card or the non-operational communications link requires maintenance. As discussed above with respect to claim 1, neither Cantwell nor Read, alone or in combination, appears to teach of or even reasonably suggest such limitations. It is respectfully submitted that the addition of Badt to Cantwell and Read does not overcome the deficiencies of Cantwell in view of Read. Accordingly, claim 19 is believed to be allowable over the art of record for at least these reasons.

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Conclusion

In view of the above, the Applicant believes that all pending claims are allowable and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below. If any fees are due in connection with the filing of this amendment, the Commissioner is authorized to charge such fees to Deposit Account 50-1652 (Order No. CISC794).

Respectfully submitted,



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